

# WOOD, HERRON & EVANS, L.L.P.

JOHN D. POFFENBERGER  
 BRUCE TITTEL  
 DONALD F. FREI  
 DAVID J. JOSEPHIC  
 DAVID S. STALLARD  
 J. ROBERT CHAMBERS  
 GREGORY J. LUNN  
 KURT L. GROSSMAN  
 CLEMENT H. LUKEN, JR.  
 THOMAS J. BURGER  
 GREGORY F. AHRENS  
 WAYNE L. JACOBS  
 KURT A. SUMME  
 KEVIN G. ROONEY  
 KEITH R. HAUT  
 THEODORE R. REMAKLUS  
 THOMAS W. HUMPHREY  
 SCOTT A. STINEBRUNER  
 DAVID H. BRINKMAN

---

OF COUNSEL  
 THOMAS W. FLYNN

2700 CAREW TOWER  
 441 VINE STREET  
 CINCINNATI, OHIO 45202-2917  
 TELEPHONE: 513-241-2324  
 FACSIMILE: 513-421-7269  
 EMAIL: [info@whepatent.com](mailto:info@whepatent.com)  
 PATENT, TRADEMARK, COPYRIGHT  
 AND UNFAIR COMPETITION LAW  
 AND RELATED LITIGATION

EDMUND P. WOOD	1923-1968
TRUMAN A. HERRON	1935-1976
EDWARD B. EVANS	1936-1971

JOSEPH R. JORDAN  
 C. RICHARD EBY

---

DAVID E. PRITCHARD  
 J. DWIGHT POFFENBERGER, JR.  
 BEVERLY A. LYMAN, PH.D.  
 KATHRYN E. SMITH  
 KRISTI L. DAVIDSON  
 P. ANDREW BLATT, PH.D.  
 DAVID E. JEFFERIES  
 WILLIAM R. ALLEN, PH.D.  
 JOHN P. DAVIS  
 DOUGLAS A. SCHOLER  
 BRETT A. SCHATZ  
 ALLISON A. DAVIDSON  
 MICHELLE D. NOBBE  
 RONALD J. RICHTER, M.D.  
 SARAH OTTE GRABER

---

TECHNICAL ADVISORS  
 HENRY M. LABODA, PH.D.  
 LARRY D. MOORE, B.S.E.E.  
 G. PRABHAKAR REDDY, M.S.C.H.

January 21, 2003

## FACSIMILE COVER SHEET

To: Examiner Jose H. Alcala  
 Assistant Commissioner for Patents  
 Washington, D.C. 20231

Fax: 703-872-9319

Enclosures:

Fax Cover Sheet containing Certificate  
 of Facsimile Transmission  
 Transmittal containing Certificate of  
 Facsimile Transmission  
 Response After Final

From: Scott A. Stinebruner  
 Reg. No. 38,323

Re: U.S. Patent Application  
 Serial No. 09/924,711  
 Filed: August 8, 2001  
 Applicant: Mark Kenneth Hoffmeyer et al.  
 Art Unit: 2827  
 Confirmation No.: 3332  
 Our Ref: IBM/145DV1

Pages: 8 (including cover sheet)

**MESSAGE/COMMENTS**  
**OFFICIAL**

**FAX RECEIVED**

JAN 21 2003

**CERTIFICATE OF FACSIMILE TRANSMISSION**

TECHNOLOGY CENTER 2800

I hereby certify that this correspondence and the enclosures noted herein (8 total pages) are being transmitted via facsimile transmission to Examiner Jose H. Alcala, Assistant Commissioner for Patents, Washington, D.C. 20231 at 703-872-9319 on January 21, 2003.

*Judith L. Volk*  
 Judith L. Volk

*January 21, 2003*  
 Date

The information in this facsimile message is ATTORNEY-CLIENT PRIVILEGED, WORK PRODUCT and/or CONFIDENTIAL INFORMATION intended only for the use of the individual or entity to whom this message is addressed. If the reader of this message is not the intended recipient or the employee or agent responsible for delivering it to the intended recipient, you are hereby notified that any dissemination, distribution or reproduction of this communication is strictly prohibited. If you have received this communication in error, please immediately notify us by telephone and return the original message to us at the above address via mail. Thank you. If transmission is interrupted or of poor quality, please notify us immediately by calling (513) 241-2324 and ask for the sender's assistant. OUR FAX NUMBER IS (513) 421-7269.

**PATENT**  
 At'ty Docket No. IBM/145DV1/124  
 Confirmation No. 3332

**CERTIFICATE OF FACSIMILE TRANSMISSION**

I hereby certify that this correspondence and the enclosures noted herein (8 total pages) are being transmitted via facsimile transmission to Examiner Jose H. Alcala, Assistant Commissioner for Patents, Washington, D.C. 20231 at 703-872-9319 on January 21, 2003

*Judith L. Volk*  
 Judith L. Volk

*January 21, 2003*  
 Date

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Mark Kenneth Hoffmeyer et al.	Art Unit:	2827
Serial No.:	09/924,711	Examiner:	Jose H. Alcala
Filed :	August 8, 2001		
For :	PROCESSING OF CIRCUIT BOARDS WITH PROTECTIVE, ADHESIVE-LESS COVERS ON AREA ARRAY BONDING SITES		

---

Box AF  
 Assistant Commissioner for Patents  
 Washington, DC 20231

## AMENDMENT TRANSMITTAL

1.  Transmitted herewith is a Response After Final.

2.  Small Entity status of this application under 37 CFR 1.9 and 1.27 has been established by a verified statement previously submitted.

Enclosed is a verified statement to establish Small Entity status

Other than a Small Entity

**FAX RECEIVED**

JAN 21 2003

3. The fee has been calculated as shown below:

**CALCULATION OF FEES**

Fee:	Number of Claims After Amendment:		Previously Paid For:	No. Extra:	At Rate:	Amount:
Total Claims	16	minus	20	0	\$18	\$0.00
Independent Claims	2	minus	3	0	\$84	\$0.00
MULTIPLE DEPENDENT CLAIM FEE						\$280
TOTAL FEE FOR CLAIMS:						\$0.00

No additional fee for claims is required.

4.  Attached is a check in the sum of \$\_\_\_\_\_ for additional claims.  
 Please charge my Deposit Account No. 23-3000 in the amount of \$\_\_\_\_\_.

5. The proceedings herein are for a patent application and the provisions of 37 CFR 1.136 apply. Complete (a) or (b) as applicable.

(a) Applicant petitions for an extension of time under 37 CFR 1.136 for the total number of months checked below:

<u>Ext. Mos.</u>	<u>Large entity</u>	<u>Small entity</u>
<input type="checkbox"/> one month	\$ 110.00	\$ 55.00
<input type="checkbox"/> two months	\$ 410.00	\$ 205.00
<input type="checkbox"/> three months	\$ 930.00	\$ 465.00
<input type="checkbox"/> four months	\$1,450.00	\$ 725.00
<input type="checkbox"/> five months	\$1,970.00	\$ 985.00

Extension fee due with this request: \$ \_\_\_\_\_Method of Payment: Check enclosed in the amount of \$ \_\_\_\_\_

If an additional extension of time is required, please consider this a petition therefor.

(Check and complete the next item, if applicable)

An extension for \_\_\_\_ months has already been secured and the fee paid thereof of \$\_\_\_\_ is deducted from the total fee due for the total months of extension now requested. Extension fee due with this request \$\_\_\_\_.

*OR*

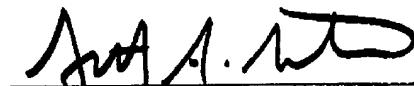
(b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

6.  If any additional fee for claims or extension of time is required, charge Account No. 23-3000.

Respectfully submitted,

WOOD, HERRON &amp; EVANS, L.L.P.

By:



Scott A. Stinebruner  
Reg. No. 38,323

2700 Carew Tower  
441 Vine Street  
Cincinnati, Ohio 45202-2917  
(513) 241-2324

FAX RECEIVED

Enclosed:  
 Fax Cover Sheet containing Certificate of Facsimile Transmission  
 Transmittal containing Certificate of Facsimile Transmission  
 Response After Final

JAN 21 2003

TECHNOLOGY CENTER 2800

PATENT

IBM/145DV1  
Confirmation No. 3332**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Mark Kenneth Hoffmeyer et al. Art Unit: 2827  
Serial No.: 09/924,711 Examiner: Jose H. Alcala  
Filed: August 8, 2001 Atty. Docket No.: IBM/145DV1  
For: PROCESSING OF CIRCUIT BOARDS WITH PROTECTIVE, ADHESIVE-  
LESS COVERS ON AREA ARRAY BONDING SITES

**RESPONSE AFTER FINAL****FAX RECEIVED**

Box AF  
Assistant Commissioner for Patents  
Washington, DC 20231

JAN 21 2003

TECHNOLOGY CENTER 2800

Sir:

This paper is submitted in reply to the Office Action dated November 6, 2002, within the three month period for response. Moreover, as no amendments are presented herein, Applicants respectfully submit that new issues are raised by this paper, and thus the remarks presented herein are appropriate for consideration by the Examiner after final. Reconsideration and allowance of all pending claims are therefore respectfully requested.

In the subject Office Action, claims 11-12, 19-21, 23-26, and 29-31 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,750,092 to Werther. Claims 22 and 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Werther in view of U.S. Patent No. 5,413,489 to Switky, while claims 28 and 32 were rejected under 35 U.S.C. §103(a) as being unpatentable over Werther.

Applicants respectfully traverse the Examiner's rejections to the extent they are maintained.

As an initial matter, Applicants wish to thank the Examiner for the consideration granted in a telephone interview conducted on January 15, 2003. In the interview, the distinctions between claims 11 and 19 and Werther were generally discussed. Moreover, Applicants respectfully submit that the arguments presented hereinafter, coupled with

Page 1 of 5  
Serial No. 09/924,711  
IBM Docket ROC92000049L1  
W&E IBM/145DV1  
Response After Final  
K:\junk\145DV1\After Final Response.wpd

those presented during the telephonic interview, are sufficient to overcome the Examiner's rejections, and that the case is now in condition for allowance. However, if the Examiner does feel there are any additional issues that need to be addressed prior to the Examiner's next communication, the Examiner is encouraged to contact the undersigned at the telephone number provided below.

Now turning to the subject Office Action, and specifically to the rejection of independent claim 11, this claim recites an assembly comprising a circuit board, an area array bonding site on a surface of the circuit board, and a protective cover overlaying the bonding site. The protective cover is removably registered to the bonding site by a plurality of posts secured to one of the protective cover and the circuit board into a plurality of apertures disposed in the other of the protective cover and the circuit board. Moreover, the protective cover is non-conductive throughout at least a region thereof that overlays the bonding site.

As noted in the interview, and as described in the Application, the structure of claim 11 is used to protect sensitive area array bonding sites from contamination during manufacture, and prior to mounting of active surface mounted components such as integrated circuit (IC) packages. Consistent with the contamination-prevention nature of the claimed protective cover, the cover is non-conductive throughout the region of the bonding site that is being protected by the cover.

Werther, on the other hand, discloses a package structure that is utilized to interconnect a semiconductor chip to a circuit board. In particular, Fig. 1 of Werther discloses an injection molded pin grid array 30 having a "picture frame" array of conductive pins 31 that are used to electrically interconnect the semiconductor chip to a circuit board. The manner in which this is accomplished is via a conductive pattern 24 and an array of conductive pin recesses 21 formed in a base 20. A semiconductor chip is mounted to base 20, and the conductive pattern 24 includes traces that extend from specific I/O pads on the semiconductor chip to specific pin recesses 21. As a result, when pin grid array 30 is aligned over base 20, the conductive pins 31 in the array are received in the pin recesses 21, thus completing the electrical interconnection with the

semiconductor chip. The pin grid array 30 and base 20 are thereafter ultrasonically welded to one another to complete the package. After welding, the opposite ends of the conductive pins 31 remain exposed for the purpose of electrically and mechanically connecting the package to a circuit board.

The Examiner apparently analogizes pin grid array 30 to a protective cover within the context of claim 11. However, while pin grid array 30 is formed of a molded, and presumably non-conductive material, the specific nature of this body in conducting electrical signals between a semiconductor chip and a circuit board in use precludes its utilization as a "protective cover" as is required by claim 11.

In particular, the Examiner will note that the structure on top of base 20, which the Examiner analogizes to a bonding site, comprises the conductive pattern 24, as well as the array of conductive pin recesses 21. This region extends nearly across the entire top surface of base 20. More importantly, however, the pin grid array 30 is not non-conductive throughout this entire region, given that the conductive pins 31 by necessity must overlap and align with their corresponding pin recesses 21 (which fall within the area of the bonding site).

As such, Werther does not disclose a "protective cover being non-conductive throughout at least a region thereof that overlays [a] bonding site", as is recited in claim 11 as is currently reads.

Furthermore, as discussed at col. 4, lines 50-54 of Werther, the pin grid array 30 of Werther is secured to base 20 via an adhesive or ultrasonic weld. Therefore, Werther also fails to disclose a protective cover that is "removably registered to [a] bonding site", as is also recited in claim 11.

Claim 11 is therefore novel over Werther, and the rejection thereof should therefore be withdrawn.

Claim 11 is also non-obvious over Werther, as there is no suggestion in the art to modify the pin grid array of Werther to either be (1) non-conductive throughout a region that overlaps a bonding site, or (2) removably registered to its matching base. Indeed, modifying the Werther assembly in this manner would destroy its intended functionality,

and render the modified assembly useless for its intended application. Were no conductive material provided in the region of pin grid array 30 that overlaps the bonding site on base 20, the semiconductor chip would effectively be incapable of receiving or transmitting electrical signals externally from the package within which it is housed. Moreover, permitting pin grid array 30 to be removed from base 20 would potentially introduce significant reliability issues for the package.

Furthermore, Werther is directed to an entirely different problem than that of protecting a bonding site from contamination during manufacture. As such, one of ordinary skill in the art would not look to Werther to provide contamination protection for a bonding site in the manner recited in claim 11.

Applicants therefore respectfully submit that claim 11 is also non-obvious over the prior art of record. Reconsideration and allowance of this claim, as well as of claims 12 and 23-29 which depend therefrom, are therefore respectfully requested.

Next, with respect to independent claim 19, this claim recites a cover for protecting an area array bonding site on a surface of a circuit board, where the circuit board has a plurality of apertures. The cover includes a base member having a first face and a second face, and shaped to at least correspond to the area array bonding site. The cover additionally includes a plurality of posts coupled to the first face and registered for the plurality of apertures. Moreover, as with claim 11, claim 19 recites that the base member is non-conductive throughout at least a region thereof that is configured to overlay the bonding site. Thus, this claim also highlights the principal nature of the cover as a temporary, protective device used during manufacture of a circuit board to protect a bonding site from contamination.

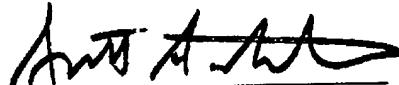
As noted above in connection with claim 11, Werther does not disclose or suggest a configuration whereby a protective cover, and in particular, a base member thereof, is non-conductive throughout a region that overlays a bonding site. Therefore, claim 19 is patentable over Werther for the same reasons as presented above for claim 11. Reconsideration and allowance of this claim, as well as of claims 20-22 and 30-32 which depend therefrom, are respectfully requested.

In summary, Applicants respectfully submit that all pending claims are novel and non-obvious over the prior art of record. Reconsideration and allowance of all pending claims are therefore respectfully requested. If the Examiner has any questions regarding the foregoing, or which might otherwise further this case onto allowance, the Examiner may contact the undersigned at (513) 241-2324. Moreover, if any other charges or credits are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,

21 JAN 2003

Date

  
Scott A. Stinebrunner  
Reg. No. 38,323  
WOOD, HERRON & EVANS, L.L.P.  
2700 Carew Tower  
441 Vine Street  
Cincinnati, Ohio 45202  
(513)241-2324

FAX RECEIVED

JAN 21 2003

TECHNOLOGY CENTER 2800

Page 5 of 5  
Serial No. 09/924,711  
IBM Docket ROC920000049L1  
WH&E IBM/145DV1  
Response After Final  
K:\bm\145DV\After Final Response.wpd